Individual Proposal Report

Title: Evaluation of Selenium Sources, Levels, and Consequences in the Delta (B103) .

Geographic Area: Delta

Primary Stressor Addressed: Water Quality

Project Type: Research

Applicant Type and Name: Federal. Samuel Luoma, U.S. Geological Survey, (415) 329-4545.

Funding: The applicant requested $1,588,709 and it is recommended that full funding be provided.

Cost Share: A National Science Foundation Grant will provide $500,278 while the USGS will contribute $690,377.

Project Description: This three-year study will provide a quantitative description of the different sources of selenium concentrations in the Bay-Delta, a determination of how changes in sources may affect selenium tissue concentrations in primary consumers, a linkage of selenium concentrations in primary consumers to uptake by predators, a direct determination of whether selenium affects reproduction and development in sturgeon, models which can forecast outcomes of alternative selenium remediation/restoration strategies, and a baseline of monitoring data.

ERPP Linkage: The proposal meets the goals of the Ecosystem Restoration Program Plan (CALFED, Volume II, 28 July 1997) as it should help reduce loading, concentrations, and bioaccumulation of contaminants of concern to ecosystem health in the water, sediments, and tissues of fish and wildlife in the Sacramento-San Joaquin Delta Ecological Zone by 25 to 50% as measured against current average levels (page 57).

AFRP Linkage: This proposal contributes toward making all reasonable efforts to at least double natural production of anadromous fish as it supports the following action and evaluations listed in the Revised Draft Restoration Plan for the Anadromous Fish Restoration Program (USFWS, 30 May 1997): (1) Reduce toxic chemical and trace element contamination (Central Valley-wide Action 3, page 107); (2) Evaluate effects of trace elements and organic contaminants, especially selenium and PCBs, on the health of adult white sturgeon and green sturgeon, the viability of their gametes, and development of their offspring (Central Valley-wide Evaluation 6, page 108); and (3) Evaluate the direct and indirect effects of contaminants on production of anadromous fish (Central Valley-wide Evaluation 8, page 109).

Applicant's Proposed Monitoring: Monitoring is an integral part of this study. To provide the essential scientific credibility to the findings, papers will be published in first-line journals in the peer-reviewed scientific literature. Staff will review the proposed monitoring plan and revise as necessary.